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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,343	09/08/2003	John Chen	P/144-321	1656
7590 10/09/2009 OSTROLENK, FABER, GERB & SOFFEN, LLP 1180 Avenue of the Americas New York, NY 10036-8403				
EXAMINER FIGUEROA, FELIX O				
ART UNIT 2833		PAPER NUMBER		
MAIL DATE 10/09/2009		DELIVERY MODE PAPER		

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN CHEN, KWOK FAI LAI, KUOK SANG
LEONG, MAN TAT YIP, WAI SHUN LEUNG,
CHUN WING NG, and QUINCY LEE

Appeal 2009-003614
Application 10/657,343
Technology Center 2800

Decided: October 09, 2009

Before BRADLEY R. GARRIS, CHUNG K. PAK, and TERRY J. OWENS,
Administrative Patent Judges.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL
STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 3-9 and 12-16. Claims 18 and 19, which are the only

other pending claims, stand withdrawn from consideration by the Examiner.
We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a multiport connector. Claim 3 is illustrative:

3. A multiport connector, which comprises:

a housing having at least two aligned compartments, each compartment being structured and arranged to receive respective plugs;

a multilayer printed wiring board separating the two compartments, the printed wiring board having circuit patterns on opposite sides of opposed non-conductive layers and a metal shielding layer intermediate the non-conductive layers;

a first plurality of conductive contact fingers in one of the compartments, the first plurality of fingers having first portions for making electrical contact with one of the plugs and second portions for making contact with the circuit pattern on one of the non-conductive layers of the multilayer printed wiring board; and

a second plurality of conductive contact fingers in the other of the compartments, the second plurality of fingers having first portions for making electrical contact with the other one of the plugs and second portions for making contact with the circuit pattern on the other one of the non-conductive layers of the multilayer printed wiring board.

The References

References relied upon by the Examiner

Goodall	5,531,612	Jul. 2, 1996
Yamamoto	5,865,934	Feb. 2, 1999
Wu (Wu '260)	6,132,260	Oct. 17, 2000
Kunz	6,171,152 B1	Jan. 9, 2001
Laity	6,183,308 B1	Feb. 6, 2001

Reference relied upon by the Appellants

Wu (Wu '725)	6,206,725 B1	Mar. 27, 2001
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The Rejections

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 3-6 and 8/3-8/6 over Wu '260 in view of Yamamoto and Kunz; claims 7 and 8/7 over Wu '260 in view of Yamamoto, Kunz and Laity; claims 9/8/3-9/8/6 and 12-15 over Wu '260 in view of Yamamoto, Kunz and Goodall; and claims 9/8/7 and 16 over Wu '260 in view of Yamamoto, Kunz, Laity and Goodall.

OPINION

We affirm the rejections of claims 3-6, 8/3-8/6, 9/8/3-9/8/6 and 12-15, and reverse the rejections of claims 7, 8/7, 9/8/7 and 16.

Rejection of claims 3-6 and 8/3-8/6 over Wu '260 in view of Yamamoto and Kunz, and claims 9/8/3-9/8/5 and 12-15 over Wu '260 in view of Yamamoto, Kunz and Goodall

Issue

Have the Appellants shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, 1) a multilayer printed wiring board having a metal shielding layer between non-conductive layers, and 2) a compartment having a metal separator between two sets of toroids?

Findings of Fact

Wu '260 discloses "a stacked connector assembly having modular members integrally assembled together via a middle circuit board" (col. 1, ll. 56-57). "The middle circuit board 7 comprises an inner circuit (not shown) and a plurality of electronic elements (not shown) for performing certain functions, such as grounding, anti-cross-talk, filtering impure signal, etc." (col. 3, ll. 39-42). On opposite surfaces of middle circuit board 7 are contact fingers (70) which are sandwiched between and electrically contact

connecting sections (42) of upper and lower rows of mating contacts (4) (col. 3, ll. 60-65; Fig. 1).

Yamamoto discloses a multilayer printed wiring board having, between insulating layers (22), a metal plate (21b) which “serves as a support, a reinforcement and a heat sinking element as well as a ground electrode” (col. 9, ll. 55-61).

Kunz discloses a modular connector that comprises two layers of toroids (64-67, 70-73) and includes Faraday shield pieces (74, 76, 78) that constitute a continuous shield around the modular connector (col. 5, ll. 7-10; Fig. 3).¹

Analysis

The Appellants argue that there is no reason why one skilled in the art would use Yamamoto’s metal plate 21b, one purpose of which is to provide heat sinking, in an application in which heat generating elements are not employed, particularly where such a multilayered board would add considerable cost (Br. 5). The Appellants argue that they are not merely reciting another advantage of Yamamoto’s metal plate 21b, i.e., that it provides electrical shielding. *See id.*

The Appellants have not established that none of Wu ‘260’s exemplified circuit board elements (col. 3, ll. 39-42) generates heat. Moreover, because Wu ‘260 does not limit the types of circuit board elements that can be used, it appears that Wu ‘260 would have led one of ordinary skill in the art, through no more than ordinary creativity, to use circuit board elements including those that generate heat. *See KSR Int’l. Co.*

¹ Goodall is not relied upon by the Examiner for a disclosure that is relevant to the above-stated issue (Ans. 5-6).

v. Teleflex Inc., 550 U.S. 398, 418 (2007) (In making an obviousness determination one “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”). As for the Appellants’ argument that a multilayer circuit board would cost more, the Appellants have not established that any added cost would have been sufficiently high that one of ordinary skill in the art would have considered a multilayer circuit board to be unsuitable in Wu ‘260’s modular connector.

The Appellants argue that Wu ‘725 provides inner shielding “by an inner shielding member 3 which is vertically disposed behind the upper and lower compartments rather than incorporated in circuit boards of the upper and lower compartments or disposed horizontally between the circuit boards” (Br. 4). The Appellants ask: “Why would one skilled in the art be motivated to replace a shielding technique already shown to work in the Wu connector and instead use a different, unproven shielding technique? (Br. 4-5).

Wu ‘725’s vertical inner shield member 3 (col. 2, ll. 62-64; Fig. 3) would not provide shielding between the layers of a multilayer circuit board. Hence, one of ordinary skill in the art who desired shielding between the layers of a multilayer circuit board would have placed between the layers a shield other than Wu ‘725’s vertical inner shield member 3.

The Appellants argue that “no part of [Kunz’s] shield, let alone the part 74, separates the sets of toroids from one another but, instead, the entire shield surrounds all of the sets” (Br. 6).

Although Kunz states that Faraday shield pieces 74, 76 and 78 constitute a continuous shield around the modular connector (col. 5, ll. 7-10), as indicated by the dotted lines in Kunz’s Figure 3 which show how the

pieces of the modular connector fit together, it appears that when the modular connector is assembled, shield piece 74 is between the upper row of toroids (70-73) and the lower row of toroids (64-67) and, therefore, provides a shield between those rows.

The Appellants argue that the Examiner is disassembling Kunz's Faraday shield and combining piece 74 with Wu '260 for a purpose not taught by Kunz (Br. 6).

Kunz's placement of shield piece 74 between the rows of toroids would have indicated to one of ordinary skill in the art that shielding between rows of toroids is desirable. Hence, Kunz would have led one of ordinary skill in the art, through no more than ordinary creativity, to place a shield between rows of toroids in Wu '260's modular connector. *See KSR*, 550 U.S. at 418.

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, 1) a multilayer printed wiring board having a metal shielding layer between non-conductive layers, and 2) a compartment having a metal separator between two sets of toroids.

*Rejections of claims 7 and 8/7 over Wu '260
in view of Yamamoto, Kunz and Laity, and
claims 9/8/7 and 16 over Wu '260 in view
of Yamamoto, Kunz, Laity and Goodall*

Issue

Have the Appellants shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie

obvious, to one of ordinary skill in the art, contact fingers that are resilient and are forced into electrical contact with circuit patterns by spring action?

Findings of Fact

Laity discloses a contact wire (354) having a solder tail (358) at which it is soldered to a printed circuit board assembly (PCBA 310) (col. 10, ll. 8-12).²

Analysis

The Appellants argue that “there is no teaching in Laity to connect portions of contacts to a printed wiring board by spring pressure but, to the contrary, Laity teaches soldering” (Br. 7).

The Examiner argues that “the fact that solder may be subsequently applied does not deny that a spring connection is initially formed” (Ans. 9).

The Examiner has not pointed out where Laity discloses that a spring connection initially is formed. Nor has the Examiner explained how an initial spring connection is inherent or why, in view of Laity’s disclosure that the connection is by soldering (col. 10, ll. 8-12), one of ordinary skill in the art would have considered an initial spring connection to be desirable.

Conclusion of Law

The Appellants have shown reversible error in the Examiner’s determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, contact fingers that are resilient and are forced into electrical contact with circuit patterns by spring action.

² Goodall is not relied upon by the Examiner for a disclosure that is relevant to the above-stated issue (Ans. 5-6).

*Rejection of claim 9/8/6 over Wu '260 in
view of Yamamoto, Kunz and Goodall*

Issue

Have the Appellants shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, conductive contact fingers having circuit pattern-contacting portions that are spaced apart by greater distances than the spacings between portions that make electrical contact with a plug?

Analysis

The Examiner argues that an inspection of Wu '260's Figure 1 shows that the spacings between the contact finger portions (42) that contact middle circuit board 7 are greater than the spacings between the portions (41) that contact a plug (Ans. 9-10).

The Appellants strongly disagree "that Fig. 3 or any other Figure show[s] spacing differences between 41 and 42" (Br. 8). The Appellants argue that there is no "teaching or suggestion in the specification [sic, specification] to that effect" and that "[s]urely, if the spacing were different, the patentee would have so noted in the specification." *See id.*

Wu '260's Figures 1 and 3, which are not indicated as being drawn to scale, appear to show that the total horizontal distance encompassed by the mating contacts 4 is greater at 42 than at 41 and, therefore, appear to show a greater spacing between mating contacts 4 at 42 than at 41. Regardless, given the teachings that the portions at 42 contact corresponding contact fingers 70 on middle circuit board 7, and the portions at 41 contact corresponding contacts on a mating connector (col. 3, ll. 7-12, 60-65), one of ordinary skill in the art, through no more than ordinary creativity, would have matched the spacings at each portion with the spacings between their

respective contacts. *See KSR*, 550 U.S. at 418. When the spacings between contact fingers 70 with which the portions at 42 mate are greater than the spacings between the contacts on the mating connector with which the portions at 41 mate, then the spacings between mating contacts 4 would be greater at 42 than at 41.

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, conductive contact fingers having circuit pattern-contacting portions that are spaced apart by greater distances than the spacings between portions that make electrical contact with a plug.

DECISION/ORDER

The rejections under 35 U.S.C. § 103 of claims 3-6 and 8/3-8/6 over Wu '260 in view of Yamamoto and Kunz, and claims 9/8/3-9/8/6 and 12-15 over Wu '260 in view of Yamamoto, Kunz and Goodall are affirmed. The rejections under 35 U.S.C. § 103 of claims 7 and 8/7 over Wu '260 in view of Yamamoto, Kunz and Laity, and claims 9/8/7 and 16 over Wu '260 in view of Yamamoto, Kunz, Laity and Goodall are reversed.

It is ordered that the Examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

Appeal 2009-003614
Application 10/657,343

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